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Full Title

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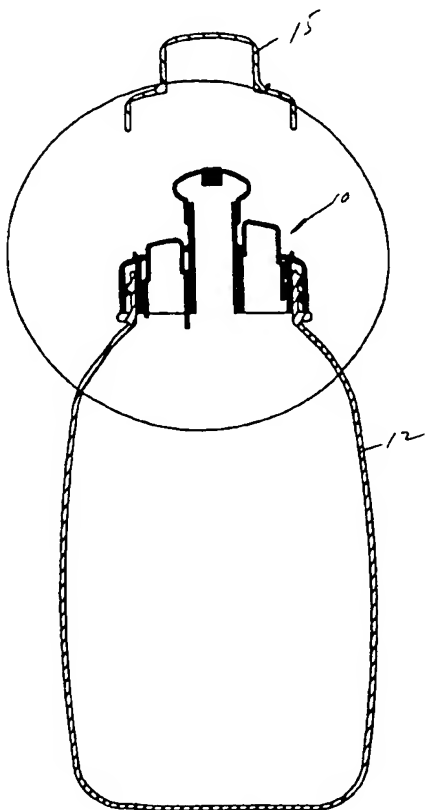
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(54) Title: CLOSURE WITH SELECTIVELY OPERABLE DISPENSE FEATURE

(57) Abstract: A closure (14) for a beverage receptacle (12) is provided with a selectively operable dispense feature. A plurality of hollow plungers (16) containing different additives are disposed in the closure (14) and are selectively operable to pierce a rupturable seal (36), permitting contents to be dispensed into the receptacle (12).



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— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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CLOSURE WITH SELECTIVELY OPERABLE DISPENSE FEATURE

CROSS-REFERENCE TO RELATED APPLICATION

5 This application claims benefit of United States Provisional
Application Number 60/244,934, filed November 1, 2000.

BACKGROUND OF THE INVENTION

1. Field of the Invention

10 The present invention is related to closures having selectively
operable dispensing features, and in particular to such closures employed
with beverage receptacles.

2. Description Of The Related Art

15 Various arrangements have been proposed for providing beverage
containers with the ability to selectively add different ingredients to com-
plete a beverage mixture. For example, United States Patent No. 4,785,931
discloses a molded plastic closure having integral stacking support ribs and
rupturable mixed compartments. Despite advances, improvements in the
20 art are continually being sought.

SUMMARY OF THE INVENTION

 It is an object of the present invention to provide a closure having
selectable dispensing features.

25 Another object of the present invention is to provide a closure of the
above type for mating engagement with a beverage-containing receptacle.

 A further object of the present invention is to provide a closure of
the above-described type in which various additives can be mixed, one at a
time, with the contents of the beverage receptacle.

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These and other objects according to principles of the present invention are provided in a dispense enclosure for a fluid receptacle comprising:

- a monolithic cylindrical body;
- 5 a plurality of plungers reciprocally mounted in said body;
- said plungers defining a hollow cavity for retaining the fluid additive;
- said plungers further defining a lower edge portion for penetrating a breakable seal on said receptacle; and
- 10 a valve member disposed in said body, configurable between an open position for dispensing fluid from said receptacle and a closed position.

BRIEF DESCRIPTION OF THE DRAWINGS

- 15 FIG. 1 is a perspective view of a beverage closure and dispensing assembly attached to a receptacle;
- FIG. 2 is a perspective view thereof with a protective cap applied;
- FIG. 3 is a fragmentary perspective view thereof, shown in exploded form;
- 20 FIG. 4 is a fragmentary perspective view thereof;
- FIG. 5 is a perspective view of the beverage closure and dispensing assembly, taken on an enlarged scale;
- FIG. 6 is a perspective view showing the underside thereof;
- FIG. 7 is an exploded perspective view of the beverage closure and
- 25 dispensing assembly and receptacle;
- FIG. 8 is another exploded perspective view thereof;
- FIG. 9 is a cross-sectional view taken along the line 9-9 of FIG. 1;
- FIG. 10 is an exploded perspective view showing the beverage closure and dispensing assembly and receptacle;
- 30 FIG. 11 is an elevational view thereof;

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FIG. 12 is an elevational view of the beverage closure and dispensing assembly shown in combination with a receptacle and a protective cover;

FIG. 13 is a top plan view thereof;

5 FIG. 14 is cross-sectional view taken on the line 14-14 of FIG. 12;

FIG. 15 shows a portion of cross-sectional view 14, taken on an enlarged scale;

FIG. 16 is a fragmentary cross-sectional view taken along the line 16-16 of FIG. 17, showing another embodiment of a beverage closure and
10 dispensing assembly with receptacle;

FIG. 17 is a perspective view of a receptacle shown with an alternative beverage closure and dispensing assembly according to principles of the present invention;

FIG. 18 is an exploded perspective view thereof;

15 FIG. 19 shows a portion of FIG. 17, taken on an enlarged scale; and

FIG. 20 is a perspective view of the alternative beverage closure and dispensing assembly.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

20 Referring now to the drawings, a beverage closure and dispensing assembly is generally indicated at 10. The beverage dispensing assembly includes a receptacle 12 for containing a fluid beverage component and a closure 14. As will be seen herein, closure 14 has selectable dispensing capability in order to provide different batches of beverage, or different
25 flavored beverages, when mixed with the contents of receptacle 12. Closure 14 includes a plurality of plungers 16 disposed about a central valve member 18. Valve member 18 includes a collar 20 movable in vertical directions to open and close a valve passageway 22. Preferably, closure 14 includes a threaded cap portion 26 for engagement with a threaded finish 28
30 of receptacle 12. A protective cap 15 is shown in FIG. 3.

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As can be seen in FIG. 1, plungers 16 include an upper closed end 30 resembling a push button for manual actuation by a user, to depress the plungers in a downward direction, toward receptacle 12. Referring to FIGS. 6, 7, and 10, it will be seen that the plungers 16 define a hollow interior cavity 32 and a lower end 34 for piercing a rupturable (foil) seal 36 affixed to receptacle 12. When the plungers 16 are depressed by a user, the plunger body is translated in a vertically downward direction, with the lower edge 34 piercing rupturable seal 36.

As indicated in the figures, four plungers are provided. Preferably, each plunger contains a different flavor additive which, when mixed with the contents of receptacle 12, produces a different flavored beverage. Upon recharging the fluid content of receptacle 12 a different plunger is depressed to pierce a different portion of the rupturable seal 36 and to mix with the receptacle contents to produce a different flavored beverage. The receptacle is subsequently re-charged and different plungers are depressed until additives in the closure have all been dispensed.

FIGS. 16-20 show a receptacle 12 in combination with an alternative beverage closure and dispensing assembly generally indicated at 100. A single plunger 102 dispenses an additive into the receptacle 12. A bottom edge 108 of the plunger pierces a rupturable seal, preferably in the form of a foil 110 (see FIG. 16).

As can be seen from the above, the present invention provides an interactive package concept that allows the end user to create his or her own "mix" for drinking. The flavor cap has 1-4 chambers loaded with different colorants and/or flavors. When the foil seal is punctured via the center shaft for single additive or any of four buttons for multiple additives, ingredients are dropped into a clear/base solution, e.g., water. Reaction of the two components can be varied to include an animated use of ingredients that move, change shape and color, etc., thus giving a visual value to the process of adding two or more components just prior to drinking.

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Also, the ability to add fresh or time and light sensitive ingredients can be accomplished with the same dynamic, e.g., powdered milk, baby formula, or vitamins, minerals and nutrients, even fresh fruit flavor.

Possibilities include, but are not limited to: sports drinks, fruit juice,
5 flavored milk, pudding, soups and candy/novelty.

Caps may also be sold separately for additional use with reusable bottles with advantages geared for travel, camping, etc.

The drawings and the foregoing descriptions are not intended to represent the only forms of the invention in regard to the details of its
10 construction and manner of operation. Changes in form and in the proportion of parts, as well as the substitution of equivalents, are contemplated as circumstances may suggest or render expedient; and although specific terms have been employed, they are intended in a generic and descriptive sense only and not for the purposes of limitation, the scope
15 of the invention being delineated by the following claims.

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What is claimed is:

1. A dispense enclosure for a fluid receptacle comprising:
a monolithic cylindrical body;
a plurality of plungers reciprocally mounted in said body;
said plungers defining a hollow cavity for retaining the fluid
5 additive;
said plungers further defining a lower edge portion for penetrating
a breakable seal on said receptacle; and
a valve member disposed in said body, configurable between an
open position for dispensing fluid from said receptacle and a closed
10 position.
2. The enclosure of claim 1 wherein said plurality of plungers is
disposed about said valve member.
3. The enclosure of claim 1 wherein said plungers are reciprocally
movable in directions generally parallel to one another.
4. The enclosure of claim 1 wherein said body includes a threaded
cap portion for engagement with a threaded finish of said receptacle.
5. The enclosure of claim 1 wherein said plungers have a generally
wedge-shaped cross-section.
6. The enclosure of claim 1 wherein said valve member is disposed
at the center of said cap, and said plungers are disposed about said valve
member.

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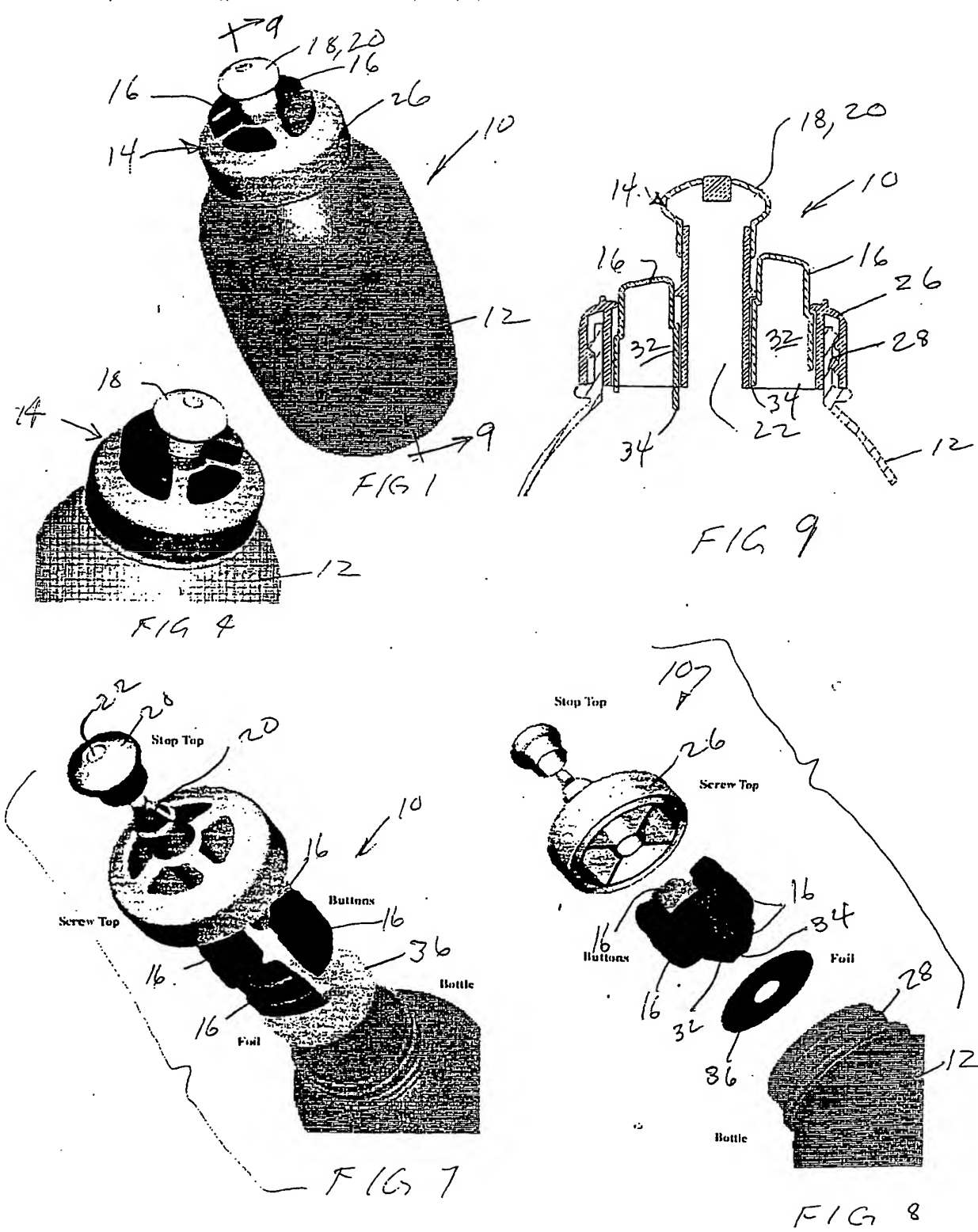
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7. The enclosure of claim 1 wherein said plungers include an upper closed end for manual engagement by a user to depress said plungers toward said receptacle, penetrating said seal.

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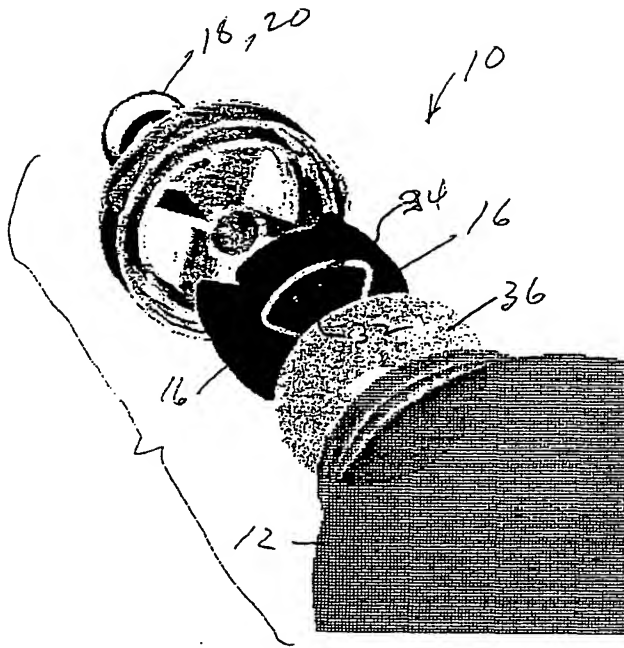


FIG 10

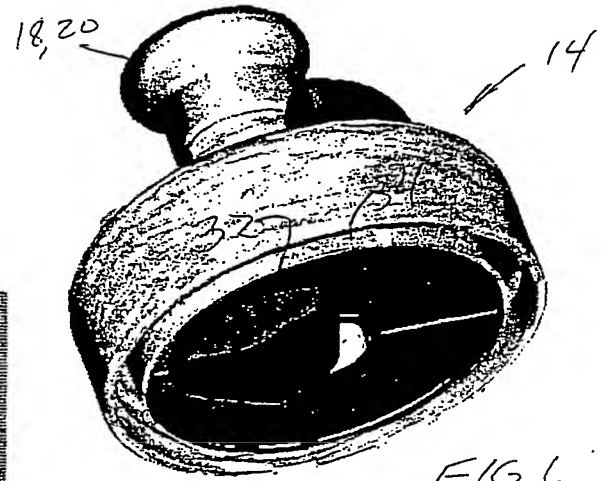


FIG 6

Button punctures foil and drops flavoring

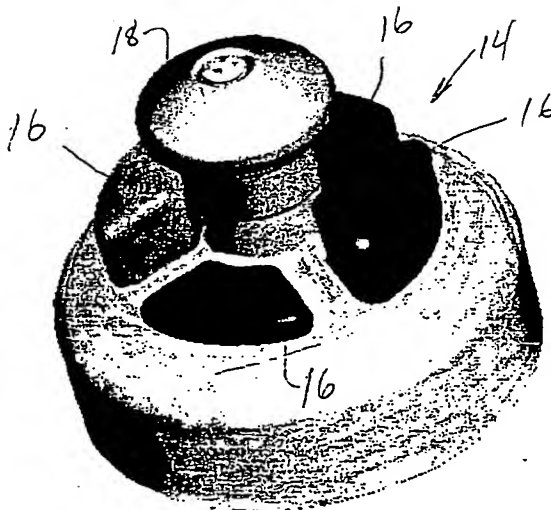


FIG 5

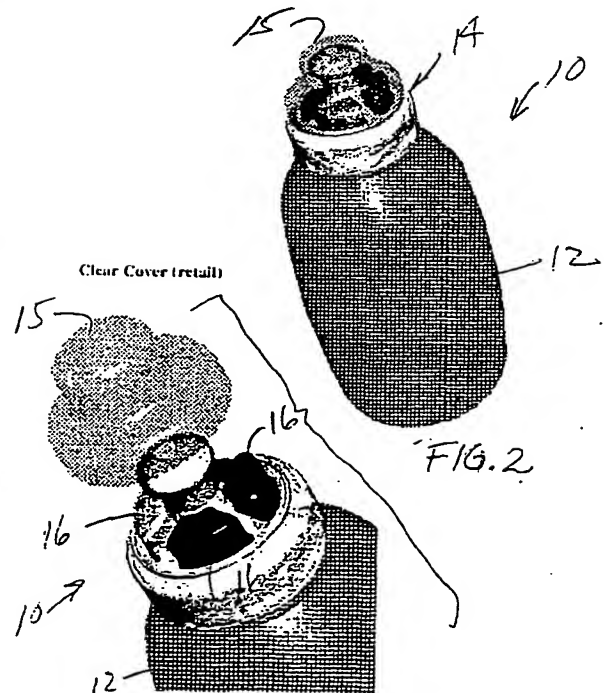


FIG 3

FIG. 2

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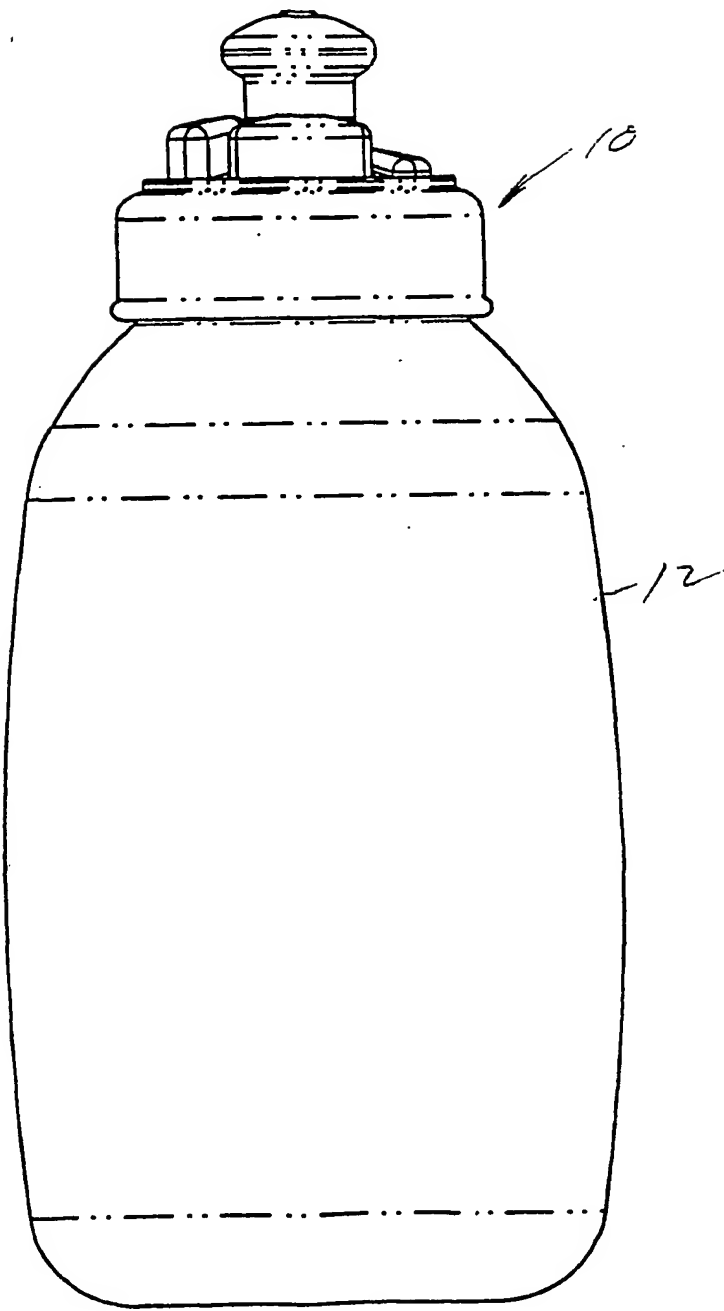
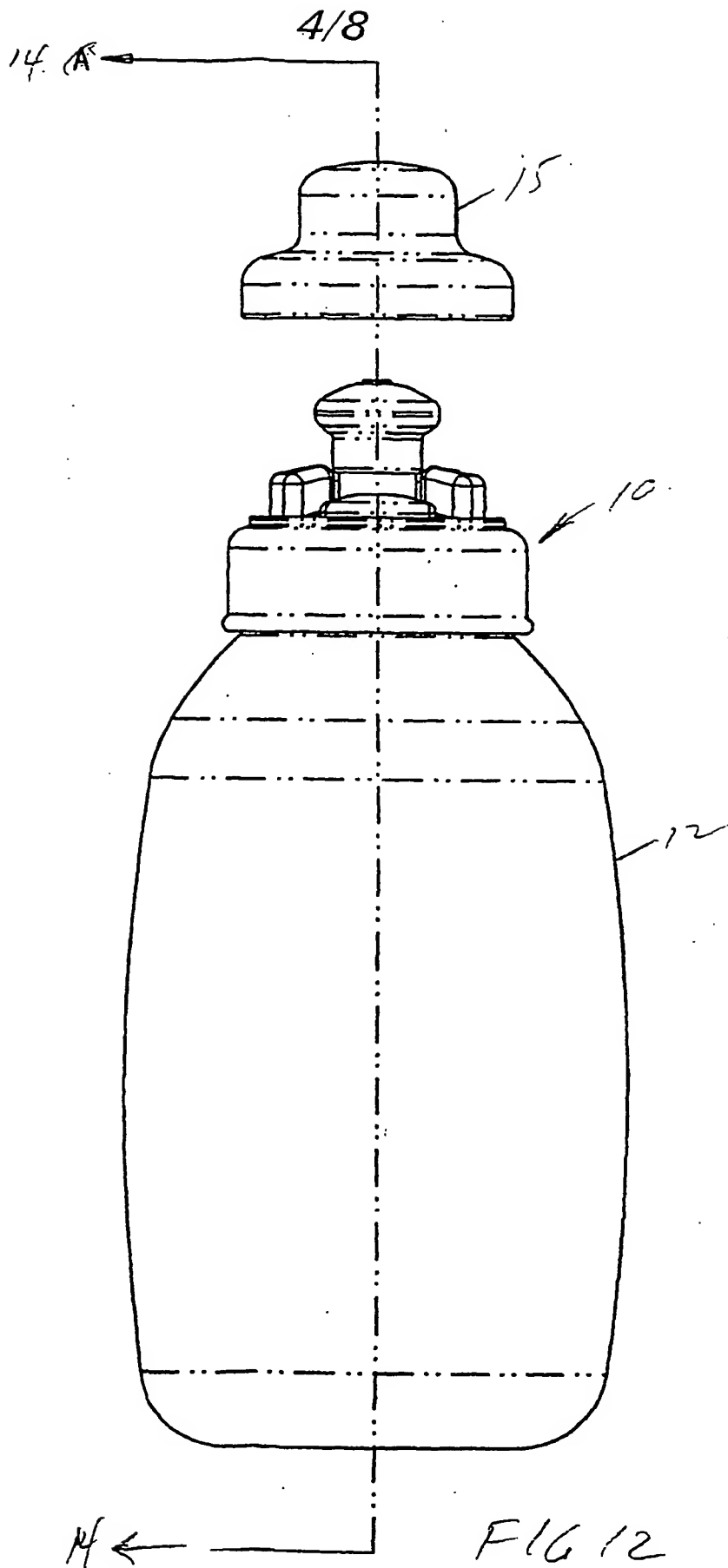


FIG 11.

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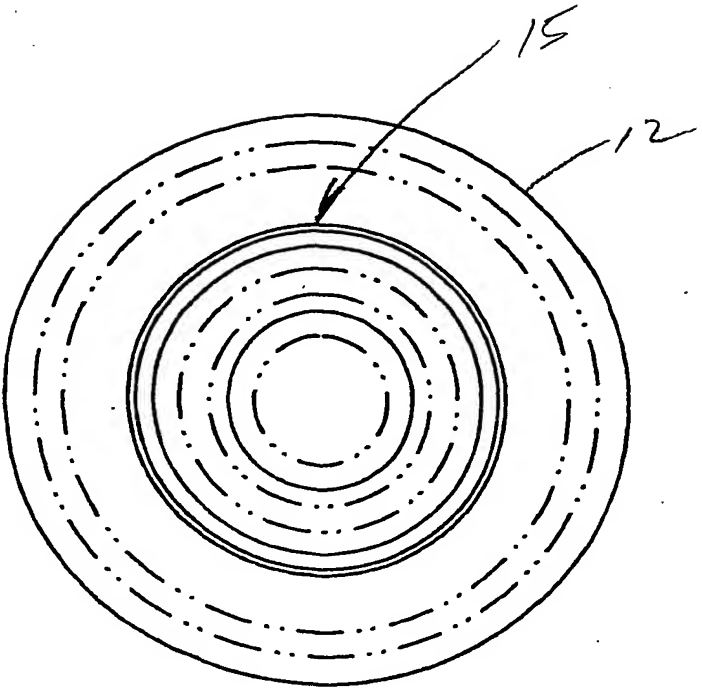


FIG 13

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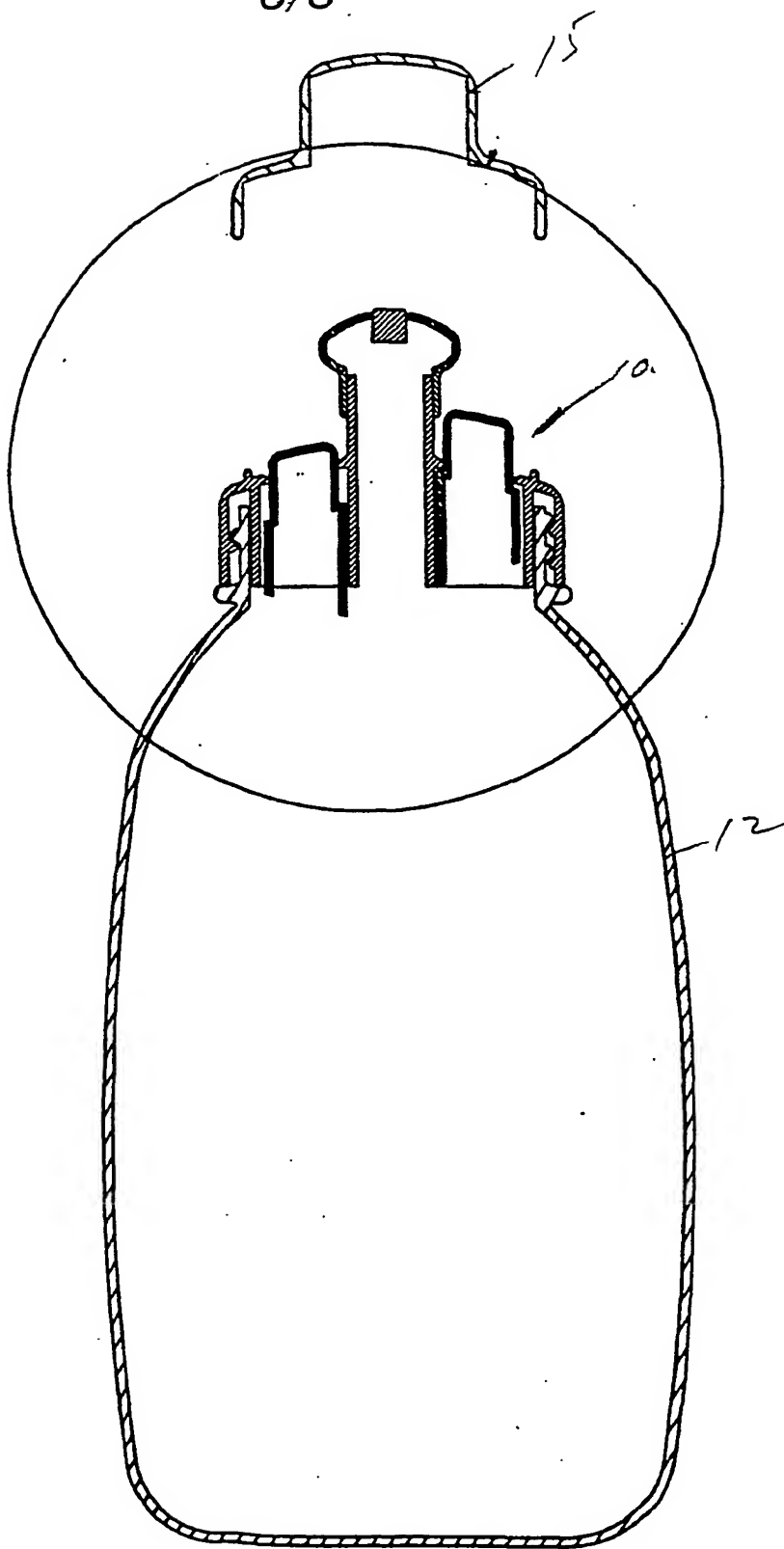
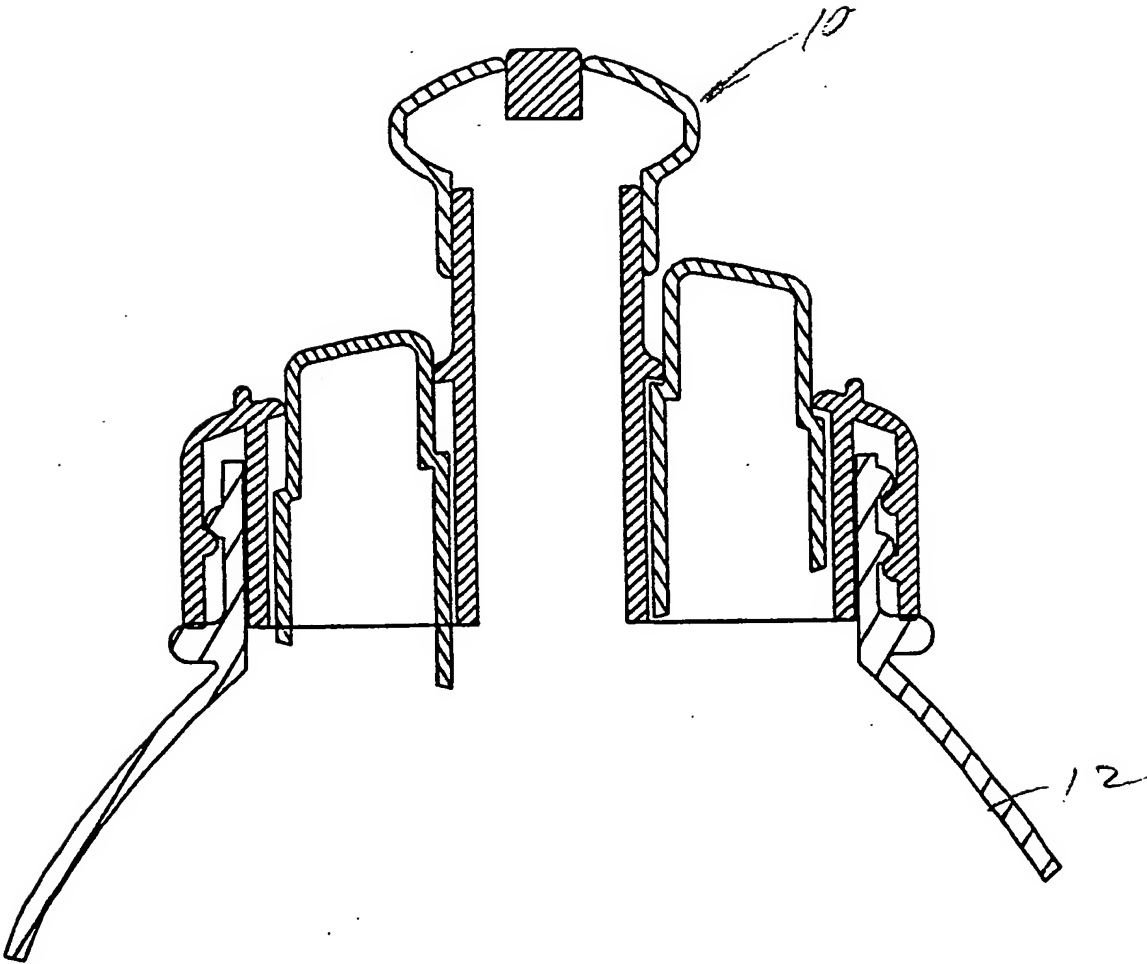


FIG 14

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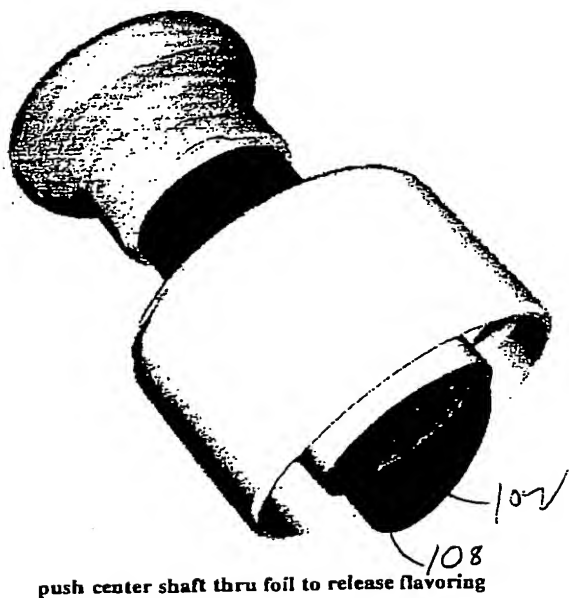
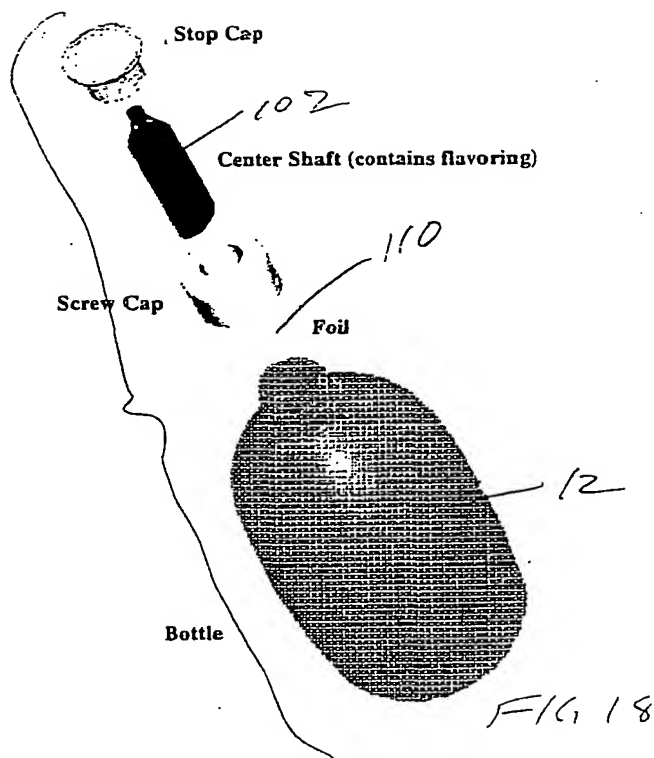
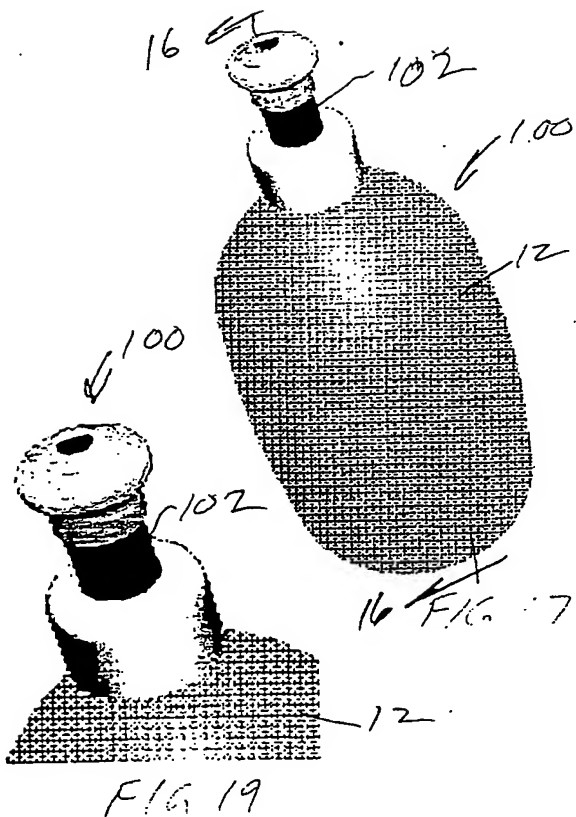
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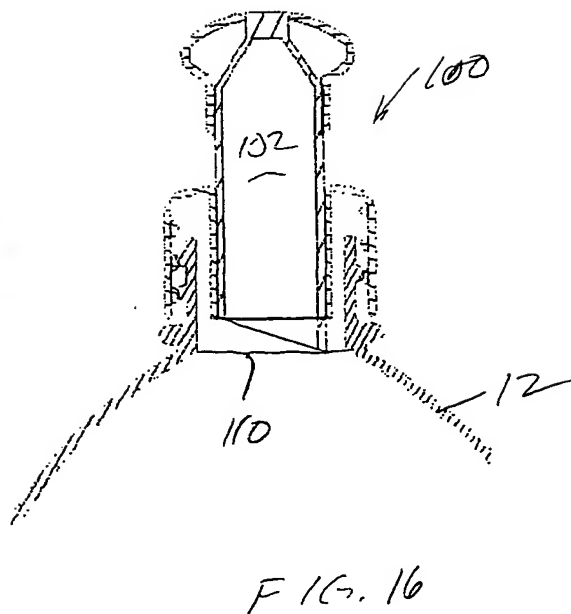
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push center shaft thru foil to release flavoring

FIG 20



INTERNATIONAL SEARCH REPORT

International application No.

PCT/US01/45618

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :B65D 25/08

US CL :206/219-222; 215/6,228

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 206/219-222; 215/6,228

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4,785,931 A (WEIR et al) 22 November 1988, see columns 2 and 3	1
A	US 4,024,952 A (LEITZ) 24 May 1977, see abstract.	1
A	US 5,788,369 A (TSENG) 04 August 1998, see abstract.	1

☐ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

26 FEBRUARY 2002

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